

# 1991 SUBJECT INDEX

## Activated carbon

- Effect of Initial Concentration of a SOC in Natural Water on Its Adsorption by Activated Carbon ..... 83:8:57  
*Issam N. Najm, Vernon L. Snoeyink, and Yves Richard*

## Aeration

- Evaluating the Costs of Packed-Tower Aeration and GAC for Controlling Selected Organics ..... 83:1:49  
*Jeffrey Q. Adams and Robert M. Clark*
- Evaluating Aeration Technology for Radon Removal ..... 83:4:141  
*Kevin L. Dixon, Ramon G. Lee, James Smith, and Paul Zielinski*
- Radon in Homes Following Its Reduction in a Community Water Supply ..... 83:4:154  
*Peter W. Rand, Eleanor H. Lacombe, and W. Dana Perkins Jr. (See also Errata 83:6:10)*
- Evaluating the Performance of Two Plastic Packings in a Crossflow Aeration Tower ..... 83:6:88  
*John C. Little and Robert E. Selleck*

## Analytical methods

- Evaluating GAC for Trihalomethane Control ..... 83:1:38  
*Michael J. McGuire, Marshall K. Davis, Carol H. Tate, E. Marco Aieta, Elaine W. Howe, and John C. Crittenden*
- Predicting GAC Performance With Rapid Small-Scale Column Tests ..... 83:1:77  
*John C. Crittenden, Parimi Sanjay Reddy, Harish Arora, John Trynoski, David W. Hand, David L. Perram, and R. Scott Summers*
- Effect of Natural Organic Matter on Biodegradation of a Recalcitrant Synthetic Organic Chemical .. 83:2:56  
*Chih-jen Lu and Gerald E. Speitel Jr.*
- Measuring Low Radon Levels in Drinking Water Supplies .... 83:4:149  
*Jerry D. Lowry*
- Bromoform and Iodoform Formation Potential Tests as Surrogates for THM Formation Potential ... 83:5:67  
*David A. Reckhow and James K. Edzwald (See also Erratum 83:9:10)*
- Analyzing the Permeation of Organic Chemicals Through Plastic Pipes ..... 83:7:92  
*Robert E. Selleck and Benito J. Marinas*

## Correlation of Coliform Growth

- Response With Other Water Quality Parameters ..... 83:7:98  
*Eugene W. Rice, Pasquale V. Scarpino, Donald J. Reasoner, Gary S. Logsdon, and Deanna K. Wild*
- Using Cobalt-Ultraviolet Spectrophotometry to Measure Hydrogen Peroxide Concentration in Organically Laden Groundwaters ..... 83:8:70  
*Dannelle Belhateche and James M. Symons*

## AWWA

- Face to Face ..... 83:5:22
- Policy Statements ..... 83:7:110

## Biofouling

- Sensitivity of the Asiatic Clam to Various Biocidal Control Agents ..... 83:10:79  
*Scott E. Belanger, Donald S. Cherry, Jerry L. Farris, Keith G. Sappington, and John Cairns Jr.*
- Controlling Adult Zebra Mussels With Oxidants ..... 83:12:92  
*Paul L. Klerks and P.C. Fraleigh*

## Biological treatment

- Microbial Activity in GAC Filters at the Choisy-le-Roi Treatment Plant ..... 83:2:62  
*Pierre Servais, Gilles Billen, Claire Ventresque, and Guy P. Bablon*
- Formation and Removal of Assimilable Organic Carbon During Biological Treatment ..... 83:12:69  
*Peter M. Huck, P.M. Fedorak, and W.B. Anderson*

## Cholera

- Prevention of Waterborne Cholera in the United States ..... 83:11:40  
*Gunther Craun, David Swerdlow, Robert Tauxe, Robert Clark, Kim Fox, Edwin Geldreich, Donald Reasoner, and Eugene Rice*

## Coagulation

- A Mechanistic Study of Ozone-Induced Particle Destabilization ..... 83:6:96  
*Marc Edwards and Mark M. Benjamin*
- Effectiveness of Natural Polyelectrolytes in Water Treatment ..... 83:10:88  
*Susumu Kawamura*

## Coliforms

- Letters to the Editor ..... 83:1:4
- Legislation/Regulation ..... 83:1:12
- Letters to the Editor ..... 83:3:10
- Legislation/Regulation ..... 83:5:12
- Investigating the Mechanism of Inactivation of *Escherichia coli* B by Monochloramine ..... 83:5:80  
*Joseph G. Jacangelo, Vincent P. Olivieri, and Kazuyoshi Kawata*
- Correlation of Coliform Growth Response With Other Water Quality Parameters ..... 83:7:98  
*Eugene W. Rice, Pasquale V. Scarpino, Donald J. Reasoner, Gary S. Logsdon, and Deanna K. Wild*
- Letters to the Editor ..... 83:8:5

## Computers

- Evaluating the Costs of Packed-Tower Aeration and GAC for Controlling Selected Organics ..... 83:1:49  
*Jeffrey Q. Adams and Robert M. Clark*
- Network Analysis From Planning, Engineering, Operations, and Management Perspectives ... 83:2:38  
*A. Lee Cesario*
- Expert Systems in Water Treatment Plant Operation ..... 83:2:43  
*Stephan J. Nix and Anthony G. Collins*
- Hardware Used for Analyzing Water Distribution Systems in Ohio .. 83:2:52  
*Simsek Sarikelle and Gregg A. Loesch*
- Using Regression Analysis to Project Pumpage ..... 83:12:45  
*Stephen D. Rhoades and Thomas M. Walski*

## Conservation

- Legislation/Regulation ..... 83:10:10
- Roundtable ..... 83:10:26
- The Emerging Demand-Side Era in Water Management ..... 83:10:38  
*Amy Vickers*
- Integrating Conservation and Water Master Planning ..... 83:10:44  
*Peter P. Macy*
- Estimating the Effects of Conservation on Demand During Droughts 83:10:48  
*Keith W. Little and David H. Moreau*
- California Industries Cut Water Use ..... 83:10:55  
*Mark Manzione, Barbara Jordan, and William O. Maddaus*

## Copper

- Legislation/Regulation ..... 83:1:12  
Legislation/Regulation ..... 83:7:12  
Roundtable ..... 83:8:26

## Corrosion

- Potential Effects of Polyphosphate  
Water Treatment Products on Lead  
Solubility in Plumbing  
Systems ..... 83:7:76  
*Thomas R. Holm and Michael R.  
Schock (See also Letters to the Editor  
83:12:10)*  
Galvanic Stimulation of Corrosion of  
Lead-Tin Solder-Sweated  
Joints ..... 83:7:83  
*Steven Reiber*

## Costs

- Evaluating the Costs of Packed-Tower  
Aeration and GAC for Controlling  
Selected Organics ..... 83:1:49  
*Jeffrey Q. Adams and Robert M. Clark*  
Conference Summary: Practical  
Aspects of the Design and Use  
of GAC ..... 83:1:58  
*Jeffrey L. Oxenford and Benjamin W.  
Lykins Jr.*

## Demand

- Legislation/Regulation ..... 83:10:10  
Roundtable ..... 83:10:26  
The Emerging Demand-Side Era in  
Water Management ..... 83:10:38  
*Amy Vickers*  
Integrating Conservation and Water  
Master Planning ..... 83:10:44  
*Peter P. Macy*  
Estimating the Effects of Conservation  
on Demand During  
Droughts ..... 83:10:48  
*Keith W. Little and David H. Moreau*

## Disinfection

- Trihalomethane Formation in Open  
Reservoirs ..... 83:3:84  
*Ali A. Karimi and Philip C. Singer*  
Applying Ozone for Organics Control  
and Disinfection: A Utility  
Perspective ..... 83:5:32  
*David W. Ferguson, Jill T. Gramith,  
and Michael J. McGuire*  
Survey of Ozone Installations in North  
America ..... 83:5:40  
*Carol H. Tate*  
The Effect of Sulfur-Based Reducing  
Agents and GAC Filtration  
on Chlorine Dioxide  
By-products ..... 83:5:48  
*Kevin L. Dixon and Ramon G. Lee*  
Using Reducing Agents to Eliminate  
Chlorine Dioxide and Chlorite Ion  
Residuals in Drinking  
Water ..... 83:5:56  
*Mark H. Griese, Keith Hauser, Mona  
Berkemeier, and Gilbert Gordon*  
THM Formation by the Transfer  
of Active Chlorine From

- Monochloramine to  
Phloracetophenone ..... 83:5:62  
*Kirankumar V. Topudurti and Charles  
N. Haas (See also Erratum 83:6:10)*  
Comparing Ozonation and Membrane  
Separation for Color Removal  
and Disinfection  
By-product Control ..... 83:5:74  
*Lo Tan and Gary L. Amy*  
Investigating the Mechanism of  
Inactivation of *Escherichia coli* B  
by Monochloramine ..... 83:5:80  
*Joseph G. Jacangelo, Vincent P.  
Olivieri, and Kazuyoshi Kawata*  
Kinetics of Manganese and Iron  
Oxidation by Potassium  
Permanganate and  
Chlorine Dioxide ..... 83:6:80  
*William R. Knocke, John E. Van  
Benschoten, Maureen J. Kearney,  
Andrew W. Soborski, and David A.  
Reckhow*  
Letters to the Editor ..... 83:8:5  
Sensitivity of the Asiatic Clam  
to Various Biocidal  
Control Agents ..... 83:10:79  
*Scott E. Belanger, Donald S. Cherry,  
Jerry L. Farris, Keith G. Sappington,  
and John Cairns Jr.*  
Comparative Subchronic Toxicity of  
Chlorine and Monochloramine  
in the B6C3F1 Mouse ..... 83:11:68  
*F. Bernard Daniel, H. Paul Ringhand,  
Merrell Robinson, Judy A. Stober,  
Greg R. Olson, and Norbert P. Page*

## Disinfection by-products

- Legislation/Regulation ..... 83:1:12  
Applying Ozone for Organics Control  
and Disinfection: A Utility  
Perspective ..... 83:5:32  
*David W. Ferguson, Jill T. Gramith,  
and Michael J. McGuire*  
Survey of Ozone Installations in North  
America ..... 83:5:40  
*Carol H. Tate*  
The Effect of Sulfur-Based Reducing  
Agents and GAC Filtration  
on Chlorine Dioxide  
By-products ..... 83:5:48  
*Kevin L. Dixon and Ramon G. Lee*  
Using Reducing Agents to Eliminate  
Chlorine Dioxide and Chlorite Ion  
Residuals in Drinking  
Water ..... 83:5:56  
*Mark H. Griese, Keith Hauser, Mona  
Berkemeier, and Gilbert Gordon*  
THM Formation by the Transfer  
of Active Chlorine From  
Monochloramine to  
Phloracetophenone ..... 83:5:62  
*Kirankumar V. Topudurti and Charles  
N. Haas (See also Erratum 83:6:10)*  
Bromoform and Iodoform Formation  
Potential Tests as Surrogates for  
THM Formation Potential ... 83:5:67  
*David A. Reckhow and James K.  
Edzwald (See also Erratum 83:9:10)*  
Comparing Ozonation and Membrane  
Separation for Color Removal and

- Disinfection By-product  
Control ..... 83:5:74  
*Lo Tan and Gary L. Amy*  
Investigating the Mechanism of  
Inactivation of *Escherichia coli* B by  
Monochloramine ..... 83:5:80  
*Joseph G. Jacangelo, Vincent P.  
Olivieri, and Kazuyoshi Kawata*  
Predicting the Formation of DBPs by  
the Simulated Distribution  
System ..... 83:10:62  
*Bart Koch, Stuart W. Krasner,  
Michael J. Scimenti, and Warren K.  
Schimpff*

## Distribution systems

- Network Analysis From Planning,  
Engineering, Operations, and  
Management Perspectives ... 83:2:38  
*A. Lee Cesario*  
Expert Systems in Water Treatment  
Plant Operation ..... 83:2:43  
*Stephan J. Nix and Anthony G. Collins*  
Hardware Used for Analyzing Water  
Distribution Systems  
in Ohio ..... 83:2:52  
*Simsek Sarielle and Gregg A. Loesch*  
Assessing the Reliability of Urban  
Reservoir Supplies ..... 83:3:46  
*J. Darrell Bakken and Thomas M.  
Bruns*  
Calibrating Hydraulic Analyses of  
Distribution Systems Using Fluoride  
Tracers ..... 83:7:54  
*Mark S. Kennedy, Simsek Sarielle,  
and Khis Suravallap*  
Locating Monitoring Stations in Water  
Distribution Systems ..... 83:7:60  
*Byoung H. Lee, Rolf A. Deininger, and  
Robert M. Clark*  
Field-Testing Distribution Water  
Quality Models ..... 83:7:67  
*Robert M. Clark, Walter M. Grayman,  
James A. Goodrich, Rolf A. Deininger,  
and Alan F. Hess*  
Potential Effects of Polyphosphate  
Water Treatment Products on Lead  
Solubility in Plumbing  
Systems ..... 83:7:76  
*Thomas R. Holm and Michael R.  
Schock (See also Letters to the Editor  
83:12:10)*  
Galvanic Stimulation of Corrosion  
of Lead-Tin Solder-Sweated  
Joints ..... 83:7:83  
*Steven Reiber*  
Analyzing the Permeation of Organic  
Chemicals Through  
Plastic Pipes ..... 83:7:92  
*Robert E. Selleck and Benito J.  
Marinas*  
Correlation of Coliform Growth  
Response With Other Water  
Quality Parameters ..... 83:7:98  
*Eugene W. Rice, Pasquale V.  
Scarpino, Donald J. Reasoner, Gary S.  
Logsdon, and Deanna K. Wild*

Association of Microorganisms With Surfaces Within Distribution Systems .....	83:7:103
<i>Diane S. Herson, Dana R. Marshall, Katherine H. Baker, and Hugo T. Victoreen</i>	
Reliability Analysis for Master Planning of a Water System .....	83:8:46
<i>Robert J. Harberg and Peter P. Macy</i>	
Financing Capital Improvements .....	83:8:50
<i>Douglas W. Ayres and Scott Thorpe</i>	
Contamination of Potable Water by Permeation of Plastic Pipe .....	83:8:53
<i>Thomas M. Holsen, Jae Kwang Park, David Jenkins, and Robert E. Selleck</i>	
Predicting the Formation of DBPs by the Simulated Distribution System .....	83:10:62
<i>Bart Koch, Stuart W. Krasner, Michael J. Scimmenti, and Warren K. Schimpff</i>	
Using Regression Analysis to Project Pumpage .....	83:12:45
<i>Stephen D. Rhoades and Thomas M. Walski</i>	

## Emergency response

Lessons Learned From the Loma Prieta Earthquake .....	83:11:34
<i>Mark A. Pickett, Gordon L. Lavery, Omar A. Abu-Yasein, and Chenwun Lay</i>	

## Errata

Errata .....	83:6:10
Errata .....	83:9:10
Erratum .....	83:12:10

## Filtration

Evaluating GAC for Trihalomethane Control .....	83:1:38
<i>Michael J. McGuire, Marshall K. Davis, Carol H. Tate, E. Marco Aieta, Elaine W. Howe, and John C. Crittenden</i>	
Evaluating the Costs of Packed-Tower Aeration and GAC for Controlling Selected Organics .....	83:1:49
<i>Jeffrey Q. Adams and Robert M. Clark</i>	
Conference Summary: Practical Aspects of the Design and Use of GAC .....	83:1:58
<i>Jeffrey L. Oxenford and Benjamin W. Lykins Jr.</i>	
Using Powdered Activated Carbon: A Critical Review .....	83:1:65
<i>Issam N. Najm, Vernon L. Snoeyink, Benjamin W. Lykins Jr., and Jeffrey Q. Adams</i>	
Predicting GAC Performance With Rapid Small-Scale Column Tests .....	83:1:77
<i>John C. Crittenden, Parimi Sanjay Reddy, Harish Arora, John Trynoski,</i>	

<i>David W. Hand, David L. Perram, and R. Scott Summers</i>	
Microbial Activity in GAC Filters at the Choisy-le-Roi Treatment Plant .....	83:2:62
<i>Pierre Servais, Gilles Billen, Claire Ventresque, and Guy P. Bablon</i>	
The Effect of Sulfur-Based Reducing Agents and GAC Filtration on Chlorine Dioxide By-products .....	83:5:48
<i>Kevin L. Dixon and Ramon G. Lee</i>	
Assessing Perlite as a Sand Substitute in Filtration .....	83:6:70
<i>Semra Siber Uluatam</i>	
Removal of Soluble Manganese by Oxide-Coated Filter Media: Sorption Rate and Removal Mechanism Issues .....	83:8:64
<i>William R. Knocke, Suzanne C. Occiano, and Robert Hungate</i>	
Review of Effects of Silver-Impregnated Carbon Filters on Microbial Water Quality .....	83:8:74
<i>Frank A. Bell Jr.</i>	
Evaluating Modifications to Slow Sand Filters .....	83:9:62
<i>M. Robin Collins, T. Taylor Eighmy, and James P. Malley Jr.</i>	
The Haberer Process: Combining Contact Flocculation, Filtration, and PAC Adsorption .....	83:9:82
<i>Klaus Haberer and Sabine Normann-Schmidt</i>	
Pilot Testing the Haberer Process in the United States .....	83:9:90
<i>John R. Stukenberg and James C. Hesby</i>	
Low-Pressure Membrane Filtration for Removing <i>Giardia</i> and Microbial Indicators .....	83:9:97
<i>Joseph G. Jacangelo, Jean-Michel Lainé, Keith E. Carns, Edward W. Cummings, and Joël Mallevialle</i>	
Formation and Removal of Assimilable Organic Carbon During Biological Treatment .....	83:12:69
<i>Peter M. Huck, P.M. Fedorak, and W.B. Anderson</i>	
Predicting and Verifying Organics Removal by PAC in an Ultrafiltration System .....	83:12:81
<i>Samer S. Adham, Vernon L. Snoeyink, Mark M. Clark, and Jean-Luc Bersillon</i>	

## Finance

Roundtable .....	83:7:30
Effective Revenue Bond Marketing—Put Your Best Foot Forward .....	83:8:40
<i>Robert B. Benson (See also Letters to the Editor 83:11:4)</i>	
Reliability Analysis for Master Planning of a Water System .....	83:8:46
<i>Robert J. Harberg and Peter P. Macy</i>	
Financing Capital Improvements .....	83:8:50
<i>Douglas W. Ayres and Scott Thorpe</i>	

## Flocculation

The Haberer Process: Combining Contact Flocculation, Filtration, and PAC Adsorption .....	83:9:82
<i>Klaus Haberer and Sabine Normann-Schmidt</i>	
Pilot Testing the Haberer Process in the United States .....	83:9:90
<i>John R. Stukenberg and James C. Hesby</i>	

## Fluoride

Legislation/Regulation .....	83:1:12
Legislation/Regulation .....	83:11:20

## Giardia

Application of Gene Probe Technology to the Water Industry .....	83:9:71
<i>Kenneth J. Richardson, Mic H. Stewart, and Roy L. Wolfe</i>	
Low-Pressure Membrane Filtration for Removing <i>Giardia</i> and Microbial Indicators .....	83:9:97
<i>Joseph G. Jacangelo, Jean-Michel Lainé, Keith E. Carns, Edward W. Cummings, and Joël Mallevialle</i>	
<i>Giardiasis</i> Risk From an Unfiltered, Protected Surface Water Source .....	83:11:46
<i>Joseph L. Glicker and Roger A. Edwards</i>	
Modeling the Risk From <i>Giardia</i> and Viruses in Drinking Water .....	83:11:76
<i>Stig Regli, Joan B. Rose, Charles N. Haas, and Charles P. Gerba</i>	

## Granular activated carbon

Evaluating GAC for Trihalomethane Control .....	83:1:38
<i>Michael J. McGuire, Marshall K. Davis, Carol H. Tate, E. Marco Aieta, Elaine W. Howe, and John C. Crittenden</i>	
Evaluating the Costs of Packed-Tower Aeration and GAC for Controlling Selected Organics .....	83:1:49
<i>Jeffrey Q. Adams and Robert M. Clark</i>	
Conference Summary: Practical Aspects of the Design and Use of GAC .....	83:1:58
<i>Jeffrey L. Oxenford and Benjamin W. Lykins Jr.</i>	
Predicting GAC Performance With Rapid Small-Scale Column Tests .....	83:1:77
<i>John C. Crittenden, Parimi Sanjay Reddy, Harish Arora, John Trynoski, David W. Hand, David L. Perram, and R. Scott Summers</i>	
Microbial Activity in GAC Filters at the Choisy-le-Roi Treatment Plant .....	83:2:62
<i>Pierre Servais, Gilles Billen, Claire Ventresque, and Guy P. Bablon</i>	
The Effect of Sulfur-Based Reducing Agents and GAC Filtration on Chlorine Dioxide By-products .....	83:5:48
<i>Kevin L. Dixon and Ramon G. Lee</i>	



Formation and Removal of Assimilable Organic Carbon During Biological Treatment ..... 83:12:69	Giardiasis Risk From an Unfiltered, Protected Surface Water Source ..... 83:11:46	Contamination of Potable Water by Permeation of Plastic Pipe ..... 83:8:53
<i>Peter M. Huck, P.M. Fedorak, and W.B. Anderson</i>	<i>Joseph L. Glicker and Roger A. Edwards</i>	<i>Thomas M. Holsen, Jae Kwang Park, David Jenkins, and Robert E. Selleck</i>
Using Anion Exchange Resins to Remove THM Precursors ... 83:12:61	Process Selection for Potable Reuse Health Effects Studies ..... 83:11:52	Permeation of Polybutylene Pipe and Gasket Material by Organic Chemicals ..... 83:10:71
<i>Philip H.-S. Kim and James M. Symons</i>	<i>William C. Lauer, Stephen E. Rogers, Anthony M. LaChance, and Myron K. Nealey</i>	<i>Jae K. Park, Laurent Bontoux, T.M. Holsen, D. Jenkins, and R.E. Selleck</i>
<b>Groundwater</b>	Inactivation of Cell-Associated and Dispersed Hepatitis A Virus in Water ..... 83:11:64	The Effect of Soils on the Permeation of Plastic Pipes by Organic Chemicals ..... 83:11:85
Legislation/Regulation ..... 83:3:20	<i>Mark D. Sobsey, Takashi Fuji, and Richard M. Hall</i>	<i>Thomas M. Holsen, Jae K. Park, Laurent Bontoux, David Jenkins, and Robert E. Selleck</i>
The Impact of the Surface Water Treatment Rule on Groundwater ..... 83:3:52	Comparative Subchronic Toxicity of Chlorine and Monochloramine in the B6C3F1 Mouse ..... 83:11:68	<b>Inorganics</b>
<i>David J. Hiltbrand, Zaid K. Chowdhury, and Linda A. Wancho</i>	<i>F. Bernard Daniel, H. Paul Ringhand, Merrell Robinson, Judy A. Stober, Greg R. Olson, and Norbert P. Page</i>	Legislation/Regulation ..... 83:1:12
(See also Letters to the Editor 83:6:10)	Modeling the Risk From <i>Giardia</i> and Viruses in Drinking Water ..... 83:11:76	Legislation/Regulation ..... 83:8:20
Is Remediated Groundwater Meeting SDWA Requirements? ..... 83:3:55	<i>Stig Regli, Joan B. Rose, Charles N. Haas, and Charles P. Gerba</i>	<b>International water supply</b>
<i>James A. Goodrich, Benjamin W. Lykins Jr., Robert M. Clark, and E. Timothy Oppelt</i>	<b>Hepatitis</b>	Microbial Activity in GAC Filters at the Choisy-le-Roi Treatment Plant ..... 83:2:62
Variations in Organic and Organoleptic Water Quality During Treatment of Artificially Recharged Groundwater ..... 83:3:63	Waterborne Viruses Associated With Hepatitis Outbreak ..... 83:3:80	<i>Pierre Servais, Gilles Billen, Claire Ventresque, and Guy P. Bablon</i>
<i>August Bruchet, K. N'Guyen, M.F. Legrand, and Joël Mallevalle</i>	<i>Albert Bosch, Francisco Lucena, Jos[e] M. Diez, Rodrigo Gajardo, Miquel Blasi, and Juan Jofre</i>	Variations in Organic and Organoleptic Water Quality During Treatment of Artificially Recharged Groundwater ..... 83:3:63
Using Cobalt-Ultraviolet Spectrophotometry to Measure Hydrogen Peroxide Concentration in Organically Laden Groundwaters ..... 83:8:70	Inactivation of Cell-Associated and Dispersed Hepatitis A Virus in Water ..... 83:11:64	<i>August Bruchet, K. N'Guyen, M.F. Legrand, and Joël Mallevalle</i>
<i>Dannelle Belhatche and James M. Symons</i>	<i>Mark D. Sobsey, Takashi Fuji, and Richard M. Hall</i>	Face to Face ..... 83:6:26
Pilot Study on Treatment of Surface Water for Groundwater Injection ..... 83:12:56	<b>Infrastructure</b>	European Drinking Water Standards ..... 83:6:48
<i>Eva C. Nieminski and Susan L. Fenhaus</i>	Roundtable ..... 83:7:30	<i>Michael Carney</i>
Predicting and Verifying Organics Removal by PAC in an Ultrafiltration System ..... 83:12:81	Potential Effects of Polyphosphate Water Treatment Products on Lead Solubility in Plumbing Systems ..... 83:7:76	Main Features of Large Water Treatment Plants in Japan ... 83:6:56
<i>Samer S. Adham, Vernon L. Snoeyink, Mark M. Clark, and Jean-Luc Bersillon</i>	<i>Thomas R. Holm and Michael R. Schock (See also Letters to the Editor 83:12:10)</i>	<i>Susumu Kawamura and R. Rhodes Trussell</i>
<b>Health effects</b>	Galvanic Stimulation of Corrosion of Lead-Tin Solder-Sweated Joints ..... 83:7:83	Reselling and Vending Water: A Challenge for Water Utilities in Developing Countries ..... 83:6:63
Review of Effects of Silver-Impregnated Carbon Filters on Microbial Water Quality ..... 83:8:74	<i>Steven Reiber</i>	<i>Tapio S. Katko</i>
<i>Frank A. Bell Jr.</i>	Analyzing the Permeation of Organic Chemicals Through Plastic Pipes ..... 83:7:92	Assessing Perlite as a Sand Substitute in Filtration ..... 83:6:70
Application of Gene Probe Technology to the Water Industry ..... 83:9:71	<i>Robert E. Selleck and Benito J. Marinas</i>	<i>Semra Siber Uluatam</i>
<i>Kenneth J. Richardson, Mic H. Stewart, and Roy L. Wolfe</i>	Association of Microorganisms With Surfaces Within Distribution Systems ..... 83:7:103	Reverse Osmosis Applications in Saudi Arabia ..... 83:6:72
Low-Pressure Membrane Filtration for Removing <i>Giardia</i> and Microbial Indicators ..... 83:9:97	<i>Diane S. Herson, Dana R. Marshall, Katherine H. Baker, and Hugo T. Victoreen</i>	<i>Abdullah M. El-Rehaili</i>
<i>Joseph G. Jacangelo, Jean-Michel Laine, Keith E. Carns, Edward W. Cummings, and Joël Mallevalle</i>	Reliability Analysis for Master Planning of a Water System ..... 83:8:46	Prevention of Waterborne Cholera in the United States ..... 83:11:40
Prevention of Waterborne Cholera in the United States ..... 83:11:40	<i>Robert J. Harberg and Peter P. Macy</i>	<i>Gunther Craun, David Swerdlow, Robert Tauxe, Robert Clark, Kim Fox, Edwin Geldreich, Donald Reasoner, and Eugene Rice</i>
<i>Gunther Craun, David Swerdlow, Robert Tauxe, Robert Clark, Kim Fox, Edwin Geldreich, Donald Reasoner, and Eugene Rice</i>	Financing Capital Improvements ..... 83:8:50	
	<i>Douglas W. Ayres and Scott Thorpe</i>	<b>Lead</b>

Galvanic Stimulation of Corrosion of Lead-Tin Solder-Sweated Joints .....	83:7:83
<i>Steven Reiber</i>	
Roundtable .....	83:8:26

## Management

Network Analysis From Planning, Engineering, Operations, and Management Perspectives ...	83:2:38
<i>A. Lee Cesario</i>	
Expert Systems in Water Treatment Plant Operation .....	83:2:43
<i>Stephan J. Nix and Anthony G. Collins</i>	
The Emerging Demand-Side Era in Water Management .....	83:12:38
<i>Amy Vickers</i>	
Effective Watershed Management for Surface Water Supplies .....	83:12:34
<i>Richard Robbins</i>	

## Manganese

Kinetics of Manganese and Iron Oxidation by Potassium Permanganate and Chlorine Dioxide .....	83:6:80
<i>William R. Knoke, John E. Van Benschoten, Maureen J. Kearney, Andrew W. Soborski, and David A. Reckhow</i>	
Removal of Soluble Manganese by Oxide-Coated Filter Media: Sorption Rate and Removal Mechanism Issues .....	83:8:64
<i>William R. Knoke, Suzanne C. Occiano, and Robert Hungate</i>	

## Membranes

Comparing Ozonation and Membrane Separation for Color Removal and Disinfection By-product Control .....	83:5:74
<i>Lo Tan and Gary L. Amy</i>	
Low-Pressure Membrane Filtration for Removing <i>Giardia</i> and Microbial Indicators .....	83:9:97
<i>Joseph G. Jacangelo, Jean-Michel Lainé, Keith E. Carns, Edward W. Cummings, and Joël Mallevalle</i>	

## Microorganisms

Microbial Activity in GAC Filters at the Choisy-le-Roi Treatment Plant .....	83:2:62
<i>Pierre Servais, Gilles Billen, Claire Ventresque, and Guy P. Bablon</i>	
Waterborne Viruses Associated With Hepatitis Outbreak .....	83:3:80
<i>Albert Bosch, Francisco Lucena, José M. Díez, Rodrigo Gajardo, Miquel Blasi, and Juan Jofre</i>	
Correlation of Coliform Growth Response With Other Water Quality Parameters .....	83:7:98
<i>Eugene W. Rice, Pasquale V. Scarpino, Donald J. Reasoner, Gary S. Logsdon, and Deanna K. Wild</i>	

Association of Microorganisms With Surfaces Within Distribution Systems .....	83:7:103
<i>Diane S. Herson, Dana R. Marshall, Katherine H. Baker, and Hugo T. Victoreen</i>	

Review of Effects of Silver-Impregnated Carbon Filters on Microbial Water Quality .....	83:8:74
<i>Frank A. Bell Jr.</i>	

Application of Gene Probe Technology to the Water Industry .....	83:9:71
<i>Kenneth J. Richardson, Mic H. Stewart, and Roy L. Wolfe</i>	

Low-Pressure Membrane Filtration for Removing <i>Giardia</i> and Microbial Indicators .....	83:9:97
<i>Joseph G. Jacangelo, Jean-Michel Lainé, Keith E. Carns, Edward W. Cummings, and Joël Mallevalle</i>	

## Modeling

Calibrating Hydraulic Analyses of Distribution Systems Using Fluoride Tracers .....	83:7:54
<i>Mark S. Kennedy, Simsek Sarikelle, and Khis Suravallop</i>	
Field-Testing Distribution Water Quality Models .....	83:7:67
<i>Robert M. Clark, Walter M. Grayman, James A. Goodrich, Rolf A. Deininger, and Alan F. Hess</i>	
Predicting the Formation of DBPs by the Simulated Distribution System .....	83:10:62
<i>Bart Koch, Stuart W. Krasner, Michael J. Scimmenti, and Warren K. Schimpff</i>	
Modeling the Risk From <i>Giardia</i> and Viruses in Drinking Water .....	83:11:76
<i>Stig Regli, Joan B. Rose, Charles N. Haas, and Charles P. Gerba</i>	

## Monitoring

Locating Monitoring Stations in Water Distribution Systems .....	83:7:60
<i>Byoung H. Lee, Rolf A. Deininger, and Robert M. Clark</i>	
Legislation/Regulation .....	83:9:16
Remote Biological Monitoring in an Open Finished-Water Reservoir .....	83:9:107
<i>Brian N. White, Dale A. Kiefer, John H. Morrow, and Gary F. Stolarik</i>	

## Monochloramines

THM Formation by the Transfer of Active Chlorine From Monochloramine to Phloracetophenone .....	83:5:62
<i>Kirankumar V. Topudurti and Charles N. Haas (See also Erratum 83:6:10)</i>	
Investigating the Mechanism of Inactivation of <i>Escherichia coli</i> B by Monochloramine .....	83:5:80
<i>Joseph G. Jacangelo, Vincent P. Olivieri, and Kazuyoshi Kawata</i>	

Comparative Subchronic Toxicity of Chlorine and Monochloramine in the B6C3F1 Mouse .....	83:11:68
<i>F. Bernard Daniel, H. Paul Ringhand, Merrell Robinson, Judy A. Stober, Greg R. Olson, and Norbert P. Page</i>	

## 1990 Errata

Erratum .....	83:3:10
---------------	---------

## Organics

Evaluating GAC for Trihalomethane Control .....	83:1:38
<i>Michael J. McGuire, Marshall K. Davis, Carol H. Tate, E. Marco Aieta, Elaine W. Howe, and John C. Crittenden</i>	
Evaluating the Costs of Packed-Tower Aeration and GAC for Controlling Selected Organics .....	83:1:49
<i>Jeffrey Q. Adams and Robert M. Clark</i>	
Conference Summary: Practical Aspects of the Design and Use of GAC .....	83:1:58
<i>Jeffrey L. Oxenford and Benjamin W. Lykins Jr.</i>	
Using Powdered Activated Carbon: A Critical Review .....	83:1:65
<i>Issam N. Najm, Vernon L. Snoeyink, Benjamin W. Lykins Jr., and Jeffrey Q. Adams</i>	
Predicting GAC Performance With Rapid Small-Scale Column Tests .....	83:1:77
<i>John C. Crittenden, Farimi Sanjay Reddy, Harish Arora, John Trynoski, David W. Hand, David L. Perram, and R. Scott Summers</i>	
Effect of Natural Organic Matter on Biodegradation of a Recalcitrant Synthetic Organic Chemical .....	83:2:56
<i>Chih-Jen Lu and Gerald E. Speitel Jr.</i>	
Accumulation and Adsorption Capacity of PAC in a Slurry Recirculating Clarifier .....	83:2:69
<i>Karim Kassam, Peter M. Huck, Albert van Roosdelaar, and Riyaz Shariff</i>	
Variations in Organic and Organoleptic Water Quality During Treatment of Artificially Recharged Groundwater .....	83:3:63
<i>August Bruchet, K. N'Guyen, M.F. Legrand, and Joël Mallevalle</i>	
The Impact of Ozonation on Particle Stability and the Removal of TOC and THM Precursors .....	83:3:71
<i>S. David Chang and Philip C. Singer</i>	
Trihalomethane Formation in Open Reservoirs .....	83:3:84
<i>Ali A. Karimi and Philip C. Singer</i>	
Applying Ozone for Organics Control and Disinfection: A Utility Perspective .....	83:5:32
<i>David W. Ferguson, Jill T. Gramith, and Michael J. McGuire</i>	
THM Formation by the Transfer of Active Chlorine From	

- Monochloramine to  
Phloracetophenone ..... 83:5:62  
*Kirankumar V. Topurdur and Charles N. Haas (See also Erratum 83:6:10)*
- Bromoform and Iodoform Formation  
Potential Tests as Surrogates for  
THM Formation Potential .... 83:5:67  
*David A. Reckhow and James K. Edzwald (See also Errata 83:9:10)*
- Analyzing the Permeation of Organic  
Chemicals Through Plastic  
Pipes ..... 83:7:92  
*Robert E. Selleck and Benito J. Marinas*
- Legislation/Regulation ..... 83:8:20
- Contamination of Potable Water by  
Permeation of Plastic Pipe ... 83:8:53  
*Thomas M. Holsen, Jae Kwang Park, David Jenkins, and Robert E. Selleck*
- Using Cobalt-Ultraviolet  
Spectrophotometry to Measure  
Hydrogen Peroxide Concentration  
in Organically Laden  
Groundwaters ..... 83:8:70  
*Dannelle Belhatche and James M. Symons*
- Pilot Testing the Haber Process  
in the United States ..... 83:9:90  
*John R. Stukenberg and James C. Hesby*
- Permeation of Polybutylene Pipe and  
Gasket Material by Organic  
Chemicals ..... 83:10:71  
*Jae K. Park, Laurent Bontoux, T.M. Holsen, D. Jenkins, and R.E. Selleck*
- The Effect of Soils on the Permeation  
of Plastic Pipes by Organic  
Chemicals ..... 83:11:85  
*Thomas M. Holsen, Jae K. Park, Laurent Bontoux, David Jenkins, and Robert E. Selleck*
- Using Anion Exchange Resins to  
Remove THM Precursors ... 83:12:61  
*Philip H.-S. Kim and James M. Symons*
- Formation and Removal of Assimilable  
Organic Carbon During Biological  
Treatment ..... 83:12:69  
*Peter M. Huck, P.M. Fedorak, and W.B. Anderson*
- Predicting and Verifying Organics  
Removal by PAC in an Ultrafiltration  
System ..... 83:12:81  
*Samer S. Adham, Vernon L. Snoeyink, Mark M. Clark, and Jean-Luc Bersillon*
- Oxidants**
- Effect of Natural Organic Matter on  
Biodegradation of a Recalcitrant  
Synthetic Organic  
Chemical ..... 83:2:56  
*Chih-jen Lu and Gerald E. Speitel Jr.*
- Kinetics of Manganese and Iron  
Oxidation by Potassium  
Permanganate and Chlorine  
Dioxide ..... 83:6:80  
*William R. Knocke, John E. Van Benschoten, Maureen J. Kearney, Andrew W. Soborski, and David A. Reckhow*
- Removal of Soluble Manganese by  
Oxide-Coated Filter Media: Sorption
- Rate and Removal Mechanism  
Issues ..... 83:8:64  
*William R. Knocke, Suzanne C. Occiano, and Robert Hungate*
- Controlling Adult Zebra Mussels  
With Oxidants ..... 83:12:92  
*Paul L. Klerks and P.C. Fraleigh*
- Ozone**
- The Impact of Ozonation on Particle  
Stability and the Removal of TOC  
and THM Precursors ..... 83:3:71  
*S. David Chang and Philip C. Singer*
- Applying Ozone for Organics Control  
and Disinfection: A Utility  
Perspective ..... 83:5:32  
*David W. Ferguson, Jill T. Gramith, and Michael J. McGuire*
- Survey of Ozone Installations in North  
America ..... 83:5:40  
*Carol H. Tate*
- Comparing Ozonation and Membrane  
Separation for Color Removal and  
Disinfection By-product  
Control ..... 83:5:74  
*Lo Tan and Gary L. Amy*
- A Mechanistic Study of Ozone-Induced  
Particle Destabilization ..... 83:6:96  
*Marc Edwards and Mark M. Benjamin*
- Packed towers**
- Evaluating the Costs of Packed-Tower  
Aeration and GAC for Controlling  
Selected Organics ..... 83:1:49  
*Jeffrey Q. Adams and Robert M. Clark*
- Evaluating the Performance of Two  
Plastic Packings in a Crossflow  
Aeration Tower ..... 83:6:88  
*John C. Little and Robert E. Selleck*
- Plastic pipe**
- Analyzing the Permeation of Organic  
Chemicals Through Plastic  
Pipes ..... 83:7:92  
*Robert E. Selleck and Benito J. Marinas*
- Contamination of Potable Water by  
Permeation of Plastic Pipe ... 83:8:53  
*Thomas M. Holsen, Jae Kwang Park, David Jenkins, and Robert E. Selleck*
- Permeation of Polybutylene Pipe and  
Gasket Material by Organic  
Chemicals ..... 83:10:71  
*Jae K. Park, Laurent Bontoux, T.M. Holsen, D. Jenkins, and R.E. Selleck*
- The Effect of Soils on the Permeation  
of Plastic Pipes by Organic  
Chemicals ..... 83:11:85  
*Thomas M. Holsen, Jae K. Park, Laurent Bontoux, David Jenkins, and Robert E. Selleck*
- Planning**
- Network Analysis From Planning,  
Engineering, Operations, and  
Management Perspectives ... 83:2:38  
*A. Lee Cesario*
- Viewpoint ..... 83:3:30
- Assessing the Reliability of Urban  
Reservoir Supplies ..... 83:3:46  
*J. Darrell Bakken and Thomas M. Bruns*
- Reliability Analysis for Master Planning  
of a Water System ..... 83:8:46  
*Robert J. Harberg and Peter P. Macy*
- Financing Capital  
Improvements ..... 83:8:50  
*Douglas W. Ayres and Scott Thorpe*
- Integrating Conservation and Water  
Master Planning ..... 83:10:44  
*Peter P. Macy*
- Plant operations**
- Network Analysis From Planning,  
Engineering, Operations, and  
Management Perspectives ... 83:2:38  
*A. Lee Cesario*
- Expert Systems in Water Treatment  
Plant Operation ..... 83:2:43  
*Stephan J. Nix and Anthony G. Collins*
- Main Features of Large Water  
Treatment Plants in Japan ... 83:6:56  
*Susumu Kawamura and R. Rhodes Trussell*
- Kinetics of Manganese and Iron  
Oxidation by Potassium  
Permanganate and Chlorine  
Dioxide ..... 83:6:80  
*William R. Knocke, John E. Van Benschoten, Maureen J. Kearney, Andrew W. Soborski, and David A. Reckhow*
- Removal of Soluble Manganese by  
Oxide-Coated Filter Media: Sorption  
Rate and Removal  
Mechanism Issues ..... 83:8:64  
*William R. Knocke, Suzanne C. Occiano, and Robert Hungate*
- Mechanical Dewatering of Alum Solids  
and Acidified Solids:  
An Evaluation ..... 83:9:50  
*Mark M. Bishop, David A. Cornwell, A.T. Rolan, and Thomas L. Bailey*
- Laboratory Comparison of DAF With  
Conventional Treatment ..... 83:9:56  
*James P. Malley Jr. and James K. Edzwald*
- Policy statements**
- Policy Statements—Conservation,  
Employee Training and Career  
Development, and Discontinuance  
of Water Service for  
Nonpayment ..... 83:7:110
- Powdered activated carbon**
- Using Powdered Activated Carbon:  
A Critical Review ..... 83:1:65  
*Issam N. Najm, Vernon L. Snoeyink, Benjamin W. Lykins Jr., and Jeffrey Q. Adams*
- Accumulation and Adsorption Capacity  
of PAC in a Slurry Recirculating  
Clarifier ..... 83:2:69  
*Karim Kassam, Peter M. Huck, Albert van Rooselaar, and Riyaz Shariff*



- The Haberer Process: Combining Contact Flocculation, Filtration, and PAC Adsorption ..... 83:9:82  
*Klaus Haberer and Sabine Normann-Schmidt*
- Pilot Testing the Haberer Process in the United States ..... 83:9:90  
*John R. Stukenberg and James C. Hesby*
- Predicting and Verifying Organics Removal by PAC in an Ultrafiltration System ..... 83:12:81  
*Samer S. Adham, Vernon L. Snoeyink, Mark M. Clark, and Jean-Luc Bersillon*

#### Precursor removal

- The Impact of Ozonation on Particle Stability and the Removal of TOC and THM Precursors ..... 83:3:71  
*S. David Chang and Philip C. Singer*
- Using Anion Exchange Resins to Remove THM Precursors ..... 83:12:61  
*Philip H.-S. Kim and James M. Symons*
- Formation and Removal of Assimilable Organic Carbon in Biological Drinking Water Treatment ..... 83:12:69  
*Peter M. Huck, P.M. Fedorak, and W.B. Anderson*
- Predicting and Verifying Organics Removal by PAC in an Ultrafiltration System ..... 83:12:81  
*Samer S. Adham, Vernon L. Snoeyink, Mark M. Clark, and Jean-Luc Bersillon*

#### Public relations

- Viewpoint ..... 83:2:12
- Roundtable ..... 83:11:26

#### Pumping

- Using Regression Analysis to Project Pumpage ..... 83:12:45  
*Stephen D. Rhoades and Thomas M. Walski*

#### Radionuclides

- Legislation/Regulation ..... 83:1:12
- Legislation/Regulation ..... 83:4:20
- Radioactivity in Water Treatment Wastes: A Perspective ..... 83:4:134  
*Marc J. Parrotta*
- Evaluating Aeration Technology for Radon Removal ..... 83:4:141  
*Kevin L. Dixon, Ramon G. Lee, James Smith, and Paul Zielinski*
- Measuring Low Radon Levels in Drinking Water Supplies ..... 83:4:149  
*Jerry D. Lowry*
- Radon in Homes Following Its Reduction in a Community Water Supply ..... 83:4:154  
*Peter W. Rand, Eleanor H. Lacombe, and W. Dana Perkins Jr.*
- Errata ..... 83:6:10

#### Rapid small-scale column tests

- Evaluating GAC for Trihalomethane Control ..... 83:1:38  
*Michael J. McGuire, Marshall K. Davis, Carol H. Tate, E. Marco Aieta, Elaine W. Howe, and John C. Crittenden*

- Predicting GAC Performance With Rapid Small-Scale Column Tests ..... 83:1:77  
*John C. Crittenden, Parimi Sanjay Reddy, Harish Arora, John Trynoski, David W. Hand, David L. Perram, and R. Scott Summers*

#### Recharge

- Variations in Organic and Organoleptic Water Quality During Treatment of Artificially Recharged Groundwater ..... 83:3:63  
*August Bruchet, K. N'Guyen, M.F. Legrand, and Joël Mallevialle*
- Pilot Study on Treatment of a Surface Water for Groundwater Injection ..... 83:12:56  
*Eva C. Nieminski and Susan L. Fenhaus*

#### Regulations

- Letters to the Editor ..... 83:1:4
- Legislation/Regulation ..... 83:1:12
- Legislation/Regulation ..... 83:2:10
- Legislation/Regulation ..... 83:3:20
- The Impact of the Surface Water Treatment Rule on Groundwater ..... 83:3:52  
*David J. Hildebrand, Zaid K. Chowdhury, and Linda A. Wancho*
- Is Remediated Groundwater Meeting SDWA Requirements? ..... 83:3:55  
*James A. Goodrich, Benjamin W. Lykins Jr., Robert M. Clark, and E. Timothy Oppelt*
- Legislation/Regulation ..... 83:4:20
- Radioactivity in Water Treatment Wastes: A Perspective ..... 83:4:134  
*Marc J. Parrotta*
- Legislation/Regulation ..... 83:5:12
- Legislation/Regulation ..... 83:6:18
- Legislation/Regulation ..... 83:7:12
- Legislation/Regulation ..... 83:8:20
- Roundtable ..... 83:8:26
- Legislation/Regulation ..... 83:9:16
- Legislation/Regulation ..... 83:10:10
- Legislation/Regulation ..... 83:11:20
- Legislation/Regulation ..... 83:12:24

#### Reservoirs

- Assessing the Reliability of Urban Reservoir Supplies ..... 83:3:46  
*J. Darrell Bakken and Thomas M. Bruns*
- Trihalomethane Formation in Open Reservoirs ..... 83:3:84  
*Ali A. Karimi and Philip C. Singer*
- Remote Biological Monitoring in an Open Finished-Water Reservoir ..... 83:9:107  
*Brian N. White, Dale A. Kiefer, John H. Morrow, and Gary F. Stolarik*

#### Reuse

- Reverse Osmosis Applications in Saudi Arabia ..... 83:6:72  
*Abdullah M. El-Rehaili*

- Process Selection for Potable Reuse Health Effects Studies ..... 83:11:52  
*William C. Lauer, Stephen E. Rogers, Anthony M. LaChance, and Myron K. Nealey*

#### SDWA

- Legislation/Regulation ..... 83:2:10
- Is Remediated Groundwater Meeting SDWA Requirements? ..... 83:3:55  
*James A. Goodrich, Benjamin W. Lykins Jr., Robert M. Clark, and E. Timothy Oppelt*

#### Sludge

- Agronomic Effects of Land Application of Water Treatment Sludges ..... 83:4:126  
*Herschel A. Elliott and Brian A. Dempsey*
- Radioactivity in Water Treatment Wastes: A Perspective ..... 83:4:134  
*Marc J. Parrotta*
- Mechanical Dewatering of Alum Solids and Acidified Solids: An Evaluation ..... 83:9:50  
*Mark M. Bishop, David A. Cornwell, A.T. Rolan, and Thomas L. Bailey*
- A Pilot-Scale Study of Alum Sludge Dewatering in a Freezing Bed ..... 83:12:51  
*James C. Martel*

#### Surface Water Treatment Rule

- Legislation/Regulation ..... 83:1:12
- The Impact of the Surface Water Treatment Rule on Groundwater ..... 83:3:52  
*David J. Hildebrand, Zaid K. Chowdhury, and Linda A. Wancho*  
*(See also Letters to the Editor 83:6:10)*

#### Synthetic organic chemicals

- Using Powdered Activated Carbon: A Critical Review ..... 83:1:65  
*Issam N. Najm, Vernon L. Snoeyink, Benjamin W. Lykins Jr., and Jeffrey Q. Adams*
- Predicting GAC Performance With Rapid Small-Scale Column Tests ..... 83:1:77  
*John C. Crittenden, Parimi Sanjay Reddy, Harish Arora, John Trynoski, David W. Hand, David L. Perram, and R. Scott Summers*
- Effect of Natural Organic Matter on Biodegradation of a Recalcitrant Synthetic Organic Chemical ..... 83:2:56  
*Chih-Jen Lu and Gerald E. Speitel Jr.*
- Effect of Initial Concentration of a SOC in Natural Water on Its Adsorption by Activated Carbon ..... 83:8:57  
*Issam N. Najm, Vernon L. Snoeyink, and Yves Richard*

#### Taste and odor

- Variations in Organic and Organoleptic Water Quality During Treatment of

- Artificially Recharged  
Groundwater ..... 83:3:63  
*August Bruchet, K. N'Guyen, M.F.  
Legrand, and Joël Mallevalle*
- Remote Biological Monitoring in an  
Open Finished-Water  
Reservoir ..... 83:9:107  
*Brian N. White, Dale A. Kiefer, John  
H. Morrow, and Gary F. Stolarik*

## Treatment processes

- Laboratory Comparison of DAF With  
Conventional Treatment ..... 83:9:56  
*James P. Malley Jr. and James K.  
Edzwald*
- Evaluating Modifications to Slow Sand  
Filters ..... 83:9:62  
*M. Robin Collins, T. Taylor Eighmy,  
and James P. Malley Jr.*
- The Haber Process: Combining  
Contact Flocculation, Filtration,  
and PAC Adsorption ..... 83:9:82  
*Klaus Haberer and Sabine  
Normann-Schmidt*
- Pilot Testing the Haber Process in  
the United States ..... 83:9:90  
*John R. Stukenberg and James C. Hesby*
- Effectiveness of Natural  
Polyelectrolytes in Water  
Treatment ..... 83:10:88  
*Susumu Kawamura*
- Pilot Study on Treatment of a Surface  
Water for Groundwater  
Injection ..... 83:12:56  
*Eva C. Nieminski and Susan L.  
Fenhaus*
- Formation and Removal of Assimilable  
Organic Carbon in Biological  
Drinking Water  
Treatment ..... 83:12:69  
*Peter M. Huck, P.M. Fedorak, and  
W.B. Anderson*

## Trihalomethanes

- Evaluating GAC for Trihalomethane  
Control ..... 83:1:38  
*Michael J. McGuire, Marshall K.  
Davis, Carol H. Tate, E. Marco Aieta,  
Elaine W. Howe, and John C.  
Crittenden*
- The Impact of Ozonation on Particle  
Stability and the Removal of TOC  
and THM Precursors ..... 83:3:71  
*S. David Chang and Philip C. Singer*
- Trihalomethane Formation in Open  
Reservoirs ..... 83:3:84  
*Ali A. Karimi and Philip C. Singer*
- THM Formation by the Transfer of  
Active Chlorine From  
Monochloramine to  
Phloracetophenone ..... 83:5:62  
*Kirankumar V. Topudurti and Charles  
N. Haas (See also Erratum 83:6:10)*
- Bromoform and Iodoform Formation  
Potential Tests as Surrogates for  
THM Formation Potential .... 83:5:67  
*David A. Reckhow and James K.  
Edzwald (See also Erratum 83:9:10)*
- Using Anion Exchange Resins to  
Remove THM Precursors ... 83:12:61  
*Philip H.-S. Kim and James M. Symons*

## Ultrafiltration

- Predicting and Verifying Organics  
Removal by PAC in an Ultrafiltration  
System ..... 83:12:81  
*Samer S. Adham, Vernon L. Snoeyink,  
Mark M. Clark, and Jean-Luc Bersillon*

## US Environmental Protection Agency

- Face to Face ..... 83:2:18
- Radioactivity in Water Treatment  
Wastes: A Perspective ..... 83:4:134  
*Marc J. Parrotta*

## Viruses

- Waterborne Viruses Associated With  
Hepatitis Outbreak ..... 83:3:80  
*Albert Bosch, Francisco Lucena, José  
M. Diez, Rodrigo Gajardo, Miquel  
Blasi, and Juan Jofre*
- Inactivation of Cell-Associated and  
Dispersed Hepatitis A Virus  
in Water ..... 83:11:64  
*Mark D. Sobsey, Takashi Fuji, and  
Richard M. Hall*
- Modeling the Risk From *Giardia*  
and Viruses in Drinking  
Water ..... 83:11:76  
*Stig Regli, Joan B. Rose, Charles N.  
Haas, and Charles P. Gerba*

## Volatile organic chemicals

- Legislation/Regulation ..... 83:1:12
- Evaluating the Costs of Packed-Tower  
Aeration and GAC for Controlling  
Selected Organics ..... 83:1:49  
*Jeffrey Q. Adams and Robert M. Clark*
- Conference Summary: Practical  
Aspects of the Design and Use of  
GAC ..... 83:1:58  
*Jeffrey L. Oxenford and Benjamin W.  
Lykins Jr.*
- Using Powdered Activated Carbon: A  
Critical Review ..... 83:1:65  
*Issam N. Najm, Vernon L. Snoeyink,  
Benjamin W. Lykins Jr., and Jeffrey Q.  
Adams*
- Evaluating the Performance of Two  
Plastic Packings in a Crossflow  
Aeration Tower ..... 83:6:88  
*John C. Little and Robert E. Selleck*

## Water rights

- Roundtable ..... 83:3:36

## Water supply planning

- Network Analysis From Planning,  
Engineering, Operations, and  
Management Perspectives ... 83:2:38  
*A. Lee Cesario*
- Viewpoint ..... 83:3:30
- Assessing the Reliability of Urban  
Reservoir Supplies ..... 83:3:46  
*J. Darrell Bakken and Thomas M.  
Bruns*

## Water use

- Student Water Use ..... 83:4:132  
*Waldron M. McLellan*

- Calibrating Hydraulic Analyses of  
Distribution Systems Using Fluoride  
Tracers ..... 83:7:54  
*Mark S. Kennedy, Simsek Sarikelle,  
and Khis Suravallop*
- The Emerging Demand-Side Era in  
Water Management ..... 83:10:38  
*Amy Vickers*
- Integrating Conservation and Water  
Master Planning ..... 83:10:44  
*Peter P. Macy*
- Estimating the Effects of Conservation  
on Demand During Droughts 83:10:48  
*Keith W. Little and David H. Moreau*
- California Industries Cut Water  
Use ..... 83:10:55  
*Mark Manzione, Barbara Jordan, and  
William O. Maddaus*
- Using Regression Analysis to Project  
Pumpage ..... 83:12:45  
*Stephen D. Rhoades and Thomas M.  
Walski*

## Waterborne disease

- Waterborne Viruses Associated With  
Hepatitis Outbreak ..... 83:3:80  
*Albert Bosch, Francisco Lucena, José  
M. Diez, Rodrigo Gajardo, Miquel  
Blasi, and Juan Jofre*
- Application of Gene Probe Technology  
to the Water Industry ..... 83:9:71  
*Kenneth J. Richardson, Mic H.  
Stewart, and Roy L. Wolfe*
- Low-Pressure Membrane Filtration for  
Removing *Giardia* and Microbial  
Indicators ..... 83:9:97  
*Joseph G. Jacangelo, Jean-Michel  
Lainé, Keith E. Carns, Edward W.  
Cummings, and Joël Mallevalle*
- Prevention of Waterborne Cholera in  
the United States ..... 83:11:40  
*Günther Craun, David Swerdlow,  
Robert Tauxe, Robert Clark, Kim Fox,  
Edwin Geldreich, Donald Reasoner,  
and Eugene Rice*
- Giardiasis Risk From an Unfiltered,  
Protected Surface Water  
Source ..... 83:11:46  
*Joseph L. Glicker and Roger A.  
Edwards*
- Inactivation of Cell-Associated and  
Dispersed Hepatitis A Virus  
in Water ..... 83:11:64  
*Mark D. Sobsey, Takashi Fuji, and  
Richard M. Hall*
- Modeling the Risk From *Giardia* and  
Viruses in Drinking Water ... 83:11:76  
*Stig Regli, Joan B. Rose, Charles N.  
Haas, and Charles P. Gerba*

## Watersheds

- Effective Watershed Management for  
Surface-Water Supplies ..... 83:12:34  
*Richard Robbins*

## Zebra mussels

- Controlling Adult Zebra Mussels  
With Oxidants ..... 83:12:92  
*Paul L. Klerks and P.C. Fraleigh*



# 1991 AUTHOR INDEX

- Abu-Yasein, Omar A.—83:11:34  
 Adams, Jeffrey Q.—83:1:49, 83:1:65  
 Adham, Sumer S.—83:12:81  
 Aieta, Marco—83:1:38  
 Amy, Gary L.—83:5:74  
 Anderson, W.B.—83:12:69  
 Arora, Harish—83:1:77  
 Ayres, Douglas W.—83:8:50  
 Bablon, Guy P.—83:2:62  
 Bailey, Thomas L.—83:9:50  
 Baker, Katherine H.—83:7:103  
 Bakken, J. Darrell—83:3:46  
 Bell, Frank A. Jr.—83:8:74  
 Bellanger, Scott E.—83:10:79  
 Bellhatche, Dannelle—83:8:70  
 Benjamin, Mark M.—83:6:96  
 Benson, Robert B.—83:8:40  
 Berkemeier, Mona—83:5:56  
 Bersillon, Jean-Luc—83:12:81  
 Billen, Gilles—83:2:62  
 Bishop, Mark M.—83:9:50  
 Blasi, Miguel—83:3:80  
 Bloem, Douglas M.—83:12:34  
 Bontoux, Laurent—83:10:71, 83:11:85  
 Bosch, Albert—83:3:80  
 Bruchet, Auguste—83:3:63  
 Bruns, Thomas M.—83:3:46  
 Cairns, John Jr.—83:10:79  
 Carney, Michael—83:6:48  
 Carns, Keith E.—83:9:97  
 Cesario, A. Lee—83:2:38  
 Chang, S. David—83:3:71  
 Cherry, Donald S.—83:10:79  
 Chowdhury, Zaid K.—83:3:52  
 Clark, Mark M.—83:12:81  
 Clark, Robert M.—83:1:49, 83:3:55, 83:7:60, 83:7:67  
 Collins, Anthony G.—83:2:43  
 Collins, M. Robin—83:9:62  
 Cornwell, David A.—83:9:50  
 Craun, Gunther—83:11:40  
 Crittenden, John C.—83:1:38, 83:1:77  
 Cummings, Edward W.—83:9:97  
 Daniel, F. Bernard—83:11:68  
 Davis, Marshall K.—83:1:38  
 Deininger, Rolf A.—83:7:60, 83:7:67  
 Dempsey, Brian A.—83:4:126  
 Diez, José M.—83:3:80  
 Dixon, Kevin L.—83:4:14, 83:5:48  
 Edwards, Roger W.—83:11:46  
 Edwards, Marc—83:6:96  
 Edzwald, James K.—83:5:67, 83:9:56  
 Eighmy, T. Taylor—83:9:62  
 Elliott, Herschel—83:4:126  
 El-Rehaili, Abdullah M.—83:6:72  
 Farris, Jerry L.—83:10:79  
 Fedorak, P.M.—83:12:69  
 Fenhaus, Susan L.—83:12:56  
 Ferguson, David W.—83:5:32  
 Fox, Kim—83:11:40  
 Fraleigh, P.C.—83:12:92  
 Fuji, Takashi—83:11:64  
 Gajardo, Rodrigo—83:3:80  
 Geldreich, Edwin—83:11:40  
 Gerba, Charles P.—83:11:76  
 Glicker, Joseph L.—83:11:46, 83:12:34  
 Goodrich, James A.—83:3:55, 83:7:67  
 Gordon, Gilbert—83:5:56  
 Gramith, Jill T.—83:5:40  
 Grayman, Walter M.—83:7:67  
 Greise, Mark H.—83:5:56  
 Haas, Charles N.—83:5:62, 83:11:76  
 Haberer, Klaus—83:9:82  
 Hall, Richard M.—83:11:64  
 Hand, David W.—83:1:77  
 Harberg, Robert J.—83:8:46  
 Hauser, Keith—83:5:56  
 Herson, Diane S.—83:7:103  
 Hesby, James C.—83:9:90  
 Hess, Alan F.—83:7:67  
 Hildebrand, David J.—83:3:52  
 Holm, Thomas R.—83:7:76  
 Holsen, Thomas M.—83:8:53, 83:10:71, 83:11:85  
 Howe, Elaine W.—83:1:38  
 Huck, Peter M.—83:2:69, 83:12:69  
 Hungate, Robert—83:8:64  
 Jacangelo, Joseph G.—83:5:80, 83:9:97  
 Jenkins, David—83:8:53, 83:10:71, 83:11:85  
 Jofre, Juan—83:3:80  
 Jordan, Barbara—83:10:55  
 Karimi, Ali A.—83:3:84  
 Kassam, Karim—83:2:69  
 Katko, Tapio S.—83:6:63  
 Kawamura, Susumu—83:6:56, 83:10:88  
 Kawata, Kazuyoshi—83:5:80  
 Kearney, Maureen J.—83:6:80  
 Kennedy, Mark S.—83:7:54  
 Kiefer, Dale A.—83:9:107  
 Kim, Philip Heon-Soo—83:12:61  
 Klerks, Paul L.—83:12:92  
 Koch, Bart—83:10:62  
 Knocke, William R.—83:6:80, 83:8:64  
 Krasner, Stuart W.—83:10:62  
 LaChance, Anthony M.—83:11:52  
 Lacombe, Eleanor H.—83:4:154  
 Lainé, Jean-Michel—83:9:97  
 Lauer, William D.—83:11:52  
 Laverty, Gordon L.—83:11:34  
 Lay, Chenwun—83:11:34  
 Legrand, M.F.—83:3:63  
 Lee, Byoung H.—83:7:60  
 Lee, Ramon G.—83:4:141, 83:5:48  
 Little, John C.—83:6:88  
 Little, Keith W.—83:10:48  
 Loesch, Gregg A.—83:2:52  
 Logsdon, Gary S.—83:7:98  
 Lowry, Jerry D.—83:4:149  
 Lucena, Francisco—83:3:80  
 Lykins, Benjamin W. Jr.—83:1:58, 83:1:65, 83:3:55  
 Lu, Chih-Jen—83:2:56  
 McLellon, Waldron M.—83:4:132  
 McGuire, Michael J.—83:1:38  
 Macy, Peter P.—83:8:46, 83:10:44  
 Maddaus, William O.—83:10:55  
 Mallevalle, Joel—83:3:63, 83:9:97  
 Malley, James P. Jr.—83:9:56, 83:9:62  
 Manzione, Mark—83:10:55  
 Marinas, Benito J.—83:7:92  
 Marshall, Dana R.—83:7:103  
 Martel, James C.—83:12:51  
 Moreau, David H.—83:10:48  
 Morrow, John H.—83:9:107  
 Najm, Issam N.—83:1:65, 83:8:57  
 Nealey, Myron K.—83:11:52  
 N'Guyen, K.—83:3:63  
 Nieminski, Eva C.—83:12:56  
 Niss, Bruce M.—83:12:34  
 Nix, Stephen J.—83:2:43  
 Normann-Schmidt, Sabine—83:9:82  
 Occiano, Suzanne C.—83:8:64  
 Olivieri, Vincent P.—83:5:80  
 Olsen, Greg R.—83:11:68  
 Oppelt, E. Timothy—83:3:55  
 Oxenford, Jeffrey L.—83:1:58  
 Page, Norbert P.—83:11:68  
 Park, Jae Kwang—83:8:53, 83:10:71, 83:11:85  
 Parotta, Marc J.—83:4:134  
 Perkins, W. Dana Jr.—83:4:154  
 Perram, David L.—83:1:77  
 Pickett, Mark A.—83:11:34  
 Rand, Peter W.—83:4:154  
 Reasoner, Donald J.—83:7:98, 83:11:40  
 Reckhow, David A.—83:5:67, 83:6:80  
 Reddy, Parimi Sanjay—83:1:77  
 Regli, Stig—83:11:76  
 Reiber, Steven—83:7:83  
 Rhoades, Stephen D.—83:12:45  
 Rice, Eugene W.—83:7:98, 83:11:40  
 Richard, Yves—83:8:57  
 Richardson, Kenneth J.—83:9:71  
 Ringhand, H. Paul—83:11:68  
 Robbins, Richard W.—83:12:34  
 Robinson, Merrell—83:11:68  
 Rogers, Stephen E.—83:11:52  
 Rolan, A.T.—83:9:50  
 Rose, Joan B.—83:11:76  
 Sappington, Keith G.—83:10:79  
 Sarikelle, Simsek—83:2:52, 83:7:54  
 Scarpino, Pasquale V.—83:7:98  
 Schimpf, Warren K.—83:10:62  
 Schock, Michael R.—83:7:67  
 Scimmenti, Michael J.—83:10:62  
 Selleck, Robert E.—83:6:88, 83:7:92, 83:8:53, 83:10:71, 83:11:85  
 Servais, Pierre—83:2:62  
 Shariff, Riyaz—83:2:69  
 Singer, Philip C.—83:3:71, 83:3:84  
 Smith, James—83:4:141  
 Snoeyink, Vernon L.—83:1:65, 83:8:57, 83:12:81  
 Soborski, Andrew W.—83:6:80  
 Sobsey, Mark D.—83:11:64  
 Spietel, Gerald E. Jr.—83:2:56  
 Stewart, Mic H.—83:9:71  
 Stober, Judy A.—83:11:68  
 Stolarik, Gary F.—83:9:107  
 Stukenberg, John R.—83:9:90  
 Summers, R. Scott—83:1:77  
 Suravallo, Khis—83:7:54  
 Swerdlow, David—83:11:40  
 Symons, James M.—83:8:70, 83:12:61  
 Tan, Lo—83:5:74  
 Tauxe, Robert—83:11:40  
 Tate, Carol H.—83:1:38  
 Thorpe, Scott—83:8:50  
 Topudurti, Kirankumar V.—83:6:62  
 Trussell, R. Rhodes—83:6:56  
 Trynoski, John—83:1:77  
 Uluatam, Semra Siber—83:6:70  
 Van Benschoten, John E.—83:6:80  
 van Roosdelaar, Albert—83:2:69  
 Ventresque, Claire—83:2:62  
 Vickers, Amy—83:10:38  
 Victoreen, Hugo T.—83:7:103  
 Walski, Thomas M.—83:12:45  
 Wanchow, Linda A.—83:3:52  
 White, Brian N.—83:9:107  
 Wild, Deanna K.—83:7:98  
 Wolfe, Roy L.—83:9:71  
 Zielinski, Paul—83:4:141